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## (54) **Securing Loads to Load-Carrying Vehicles**

(57) A load-bearing assembly for a lorry comprises a platform (4) including a frame (5), sidewalls (8) which run at least in part around the platform and pivot in hook-like hinge sleeves (20) with radial access slits, and at least one securing loop (B) hinged at an edge of the platform for

attachment of load-holding means. The securing loops are hinged so that when the sidewall is lowered they can be brought down to cover the access slit (14) of the hinge sleeves. This prevents the sidewalls from accidentally coming out of their hinges. When the sidewall is raised, the securing loops not in use are held between the sidewall and an angular piece 18 and do not move.

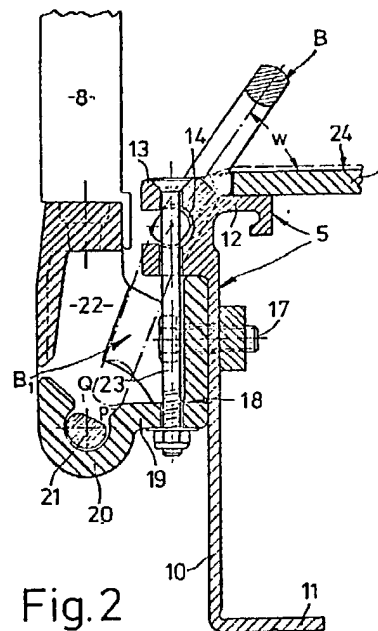
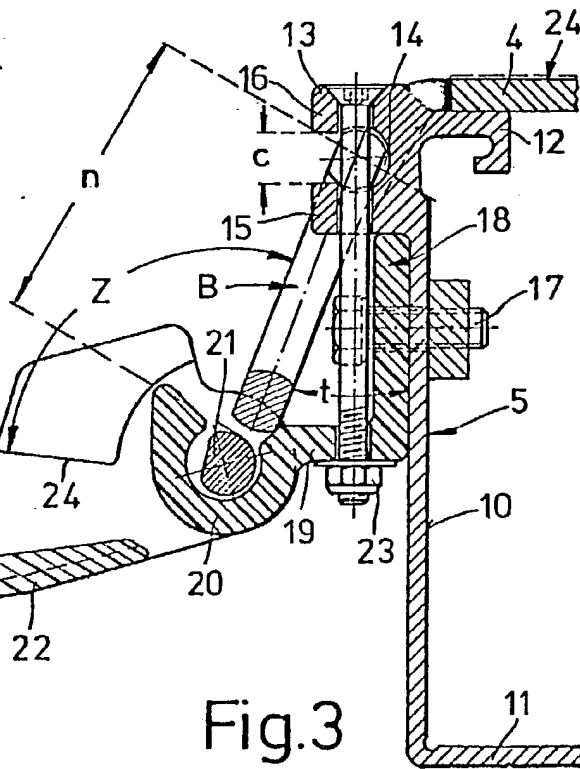
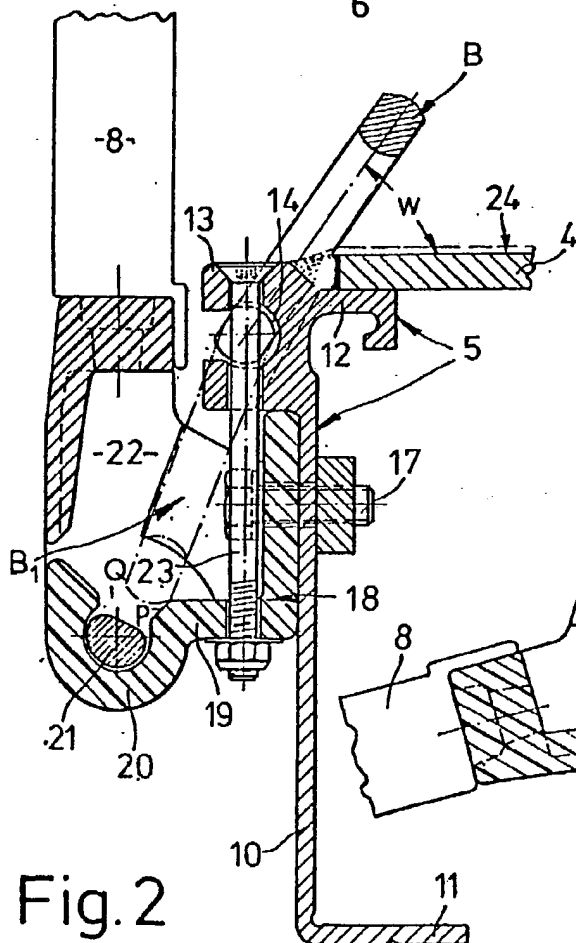
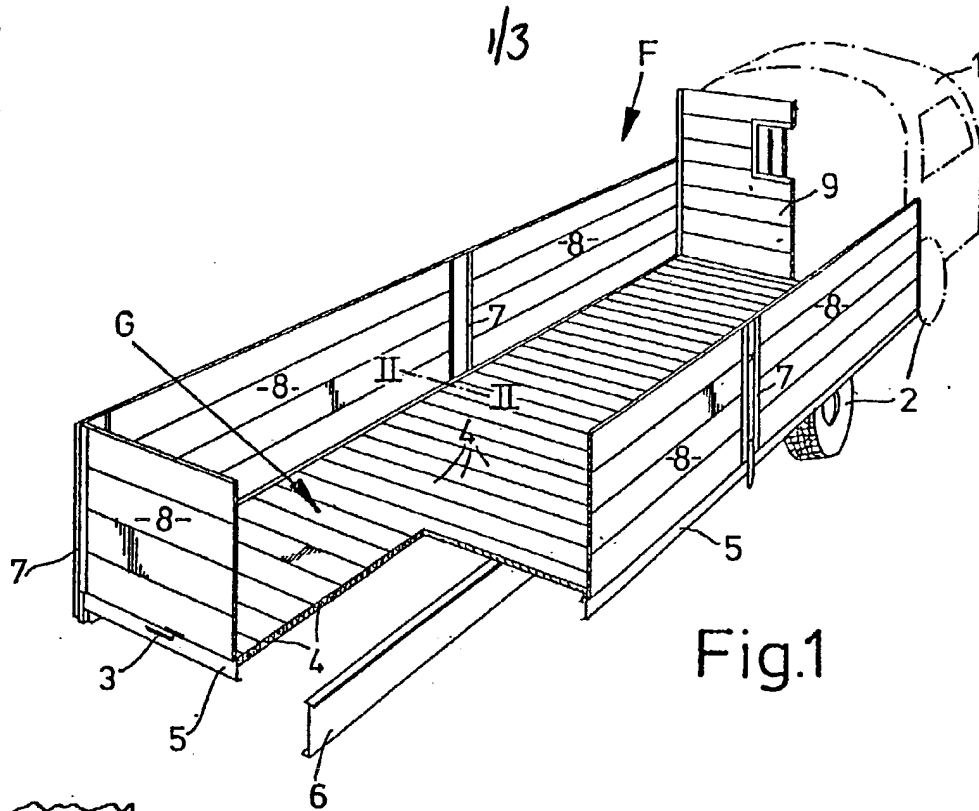


Fig. 2



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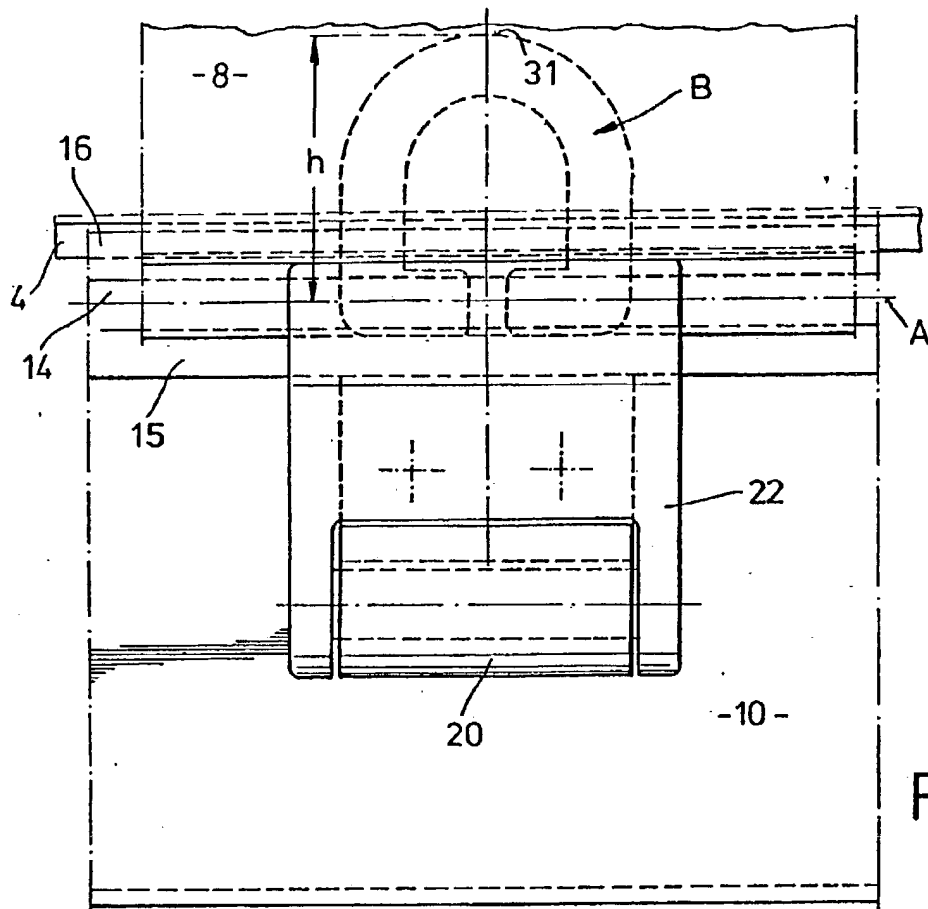


Fig.4

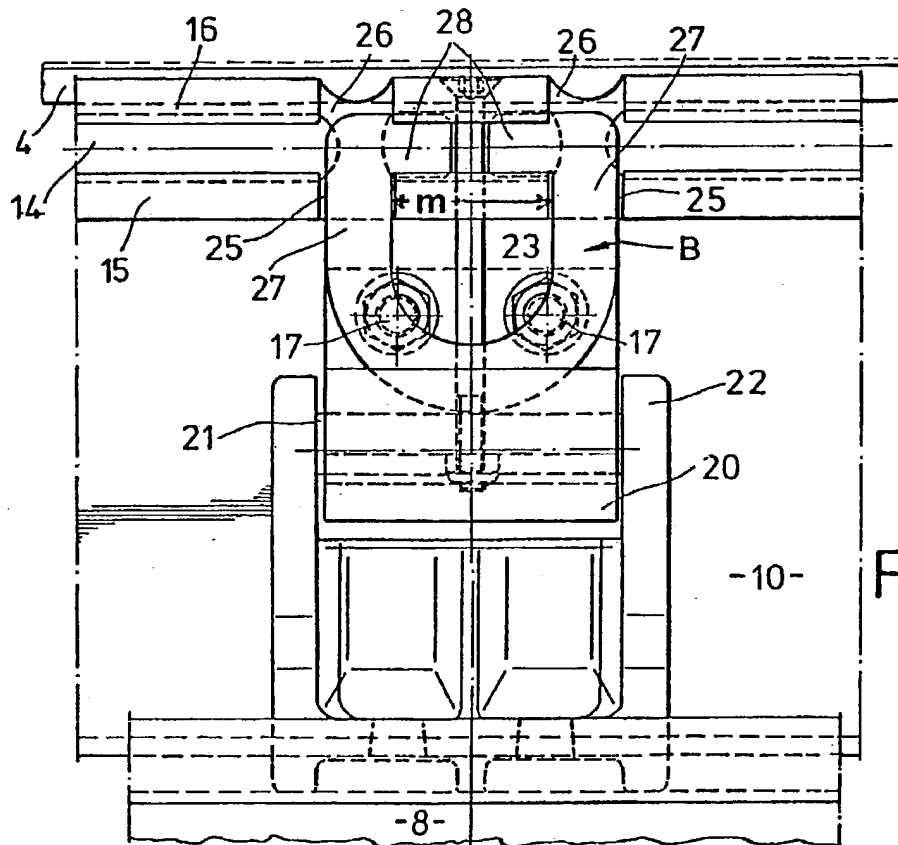
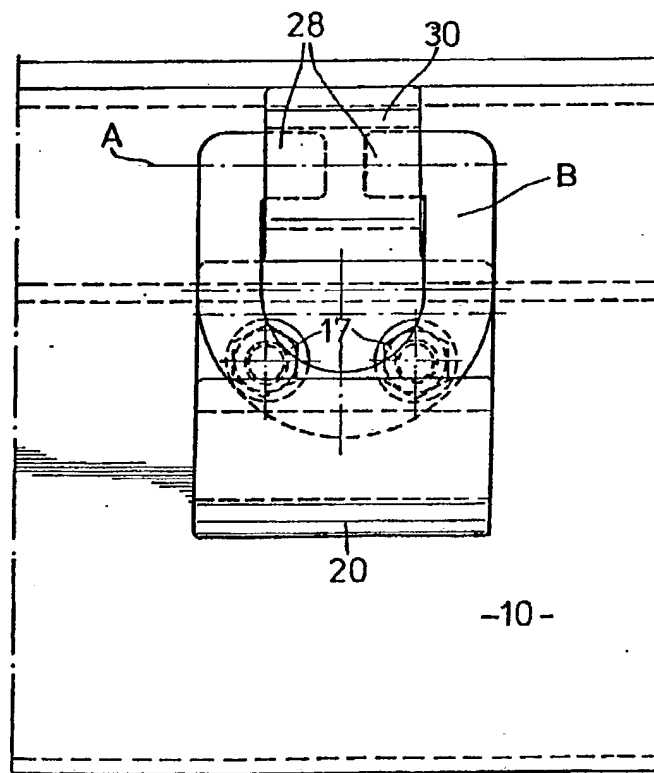
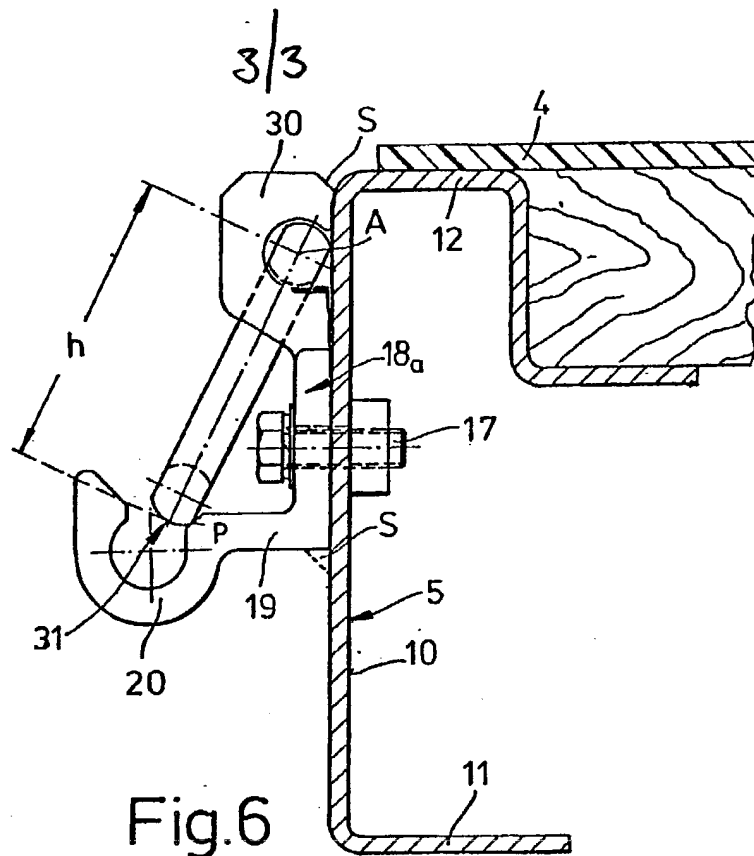


Fig.5



# SPECIFICATION

## Load-Bearing Assemblies for Load-Carrying Vehicles

The invention concerns a load-bearing assembly comprising a platform on a vehicle for transporting loads. The platform has sidewalls which run at least in part round the platform. These sidewalls are hinged to the frame and the hinge pins lie approximately parallel to the upper edge of the platform and pivot in hook-like hinge sleeves with radial access slits to admit the hinge pins.

The aim of the invention is to improve platforms used in vehicles which carry loads, where loads must be prevented from moving during transport.

In the draft of VDI guidelines 2700 on "Securing loads on road transport vehicles" (VDI Publishers Ltd., Düsseldorf, June 1973, pp 34 and 35) for example, load-bearing platforms are described where the loads are held in place by means of ropes, belts or chains fixed to rings or lugs; the loads on the vehicles must be arranged in such a manner and in keeping with the regulation that they cannot slide about during transport.

The connection between the load-carrying platform and the securing device can for example, as described in the Journal "Illustrierte Zeitung Arbeitsschutz" (Ott, Publishers, Thun, No. 1—6/1976, 1/1976, page 26), be by means of sockets in the platform in which there are hinged handle-like rings.

However such methods for securing the load have certain disadvantages which prevent them from being used with platforms of the kind mentioned earlier. The known holding devices are a plurality of parts and are therefore quite expensive to make and install; they also take up a relatively large area which makes installation more expensive, in particular when costly recesses are made in the platform. Safety during loading is particularly at risk since moving loads on or off the platform by hand-operated loading platforms or fork-lift trucks frequently results in damage. A further disadvantage is that all known holding devices are not adequately protected from damage, and they create a great deal of noise if not held in a definite position by means of a rope or the like.

To solve this specific problem and to avoid the shortcomings of the normal holding facilities, at least one hinged securing loop is provided at the edge of the loading platform to allow ropes or similar load-securing means to be attached to it, and when the sidewall is in the lowered position the securing loop can be brought down to cover the access slit and can then lie between the platform and the sidewall.

When in use the securing loop projects upwards from the platform and the load-securing means is attached to it; it can be brought down when out of use and it cannot be seen or reached from the outside. The securing loop, when out of

use, at least partly covers the hinge access slit so the sidewall is prevented from accidentally coming out of its hinges.

The sidewall in the upright using position preferably presses against the securing loop in order to prevent the securing loop from moving when it is out of use. The securing loop is held firmly in this position when it faces a stop on a part of the hinge sleeve and the sidewall.

The hinge sleeve is preferably provided on an arm of an angular piece fixed to the frame of the platform the angular piece preferably being releasably mounted on the frame. This permits reasonably inexpensive manufacture of hinges and facilitates replacement. The angular piece can be mounted on the frame by means of screws or bolts which lie either perpendicular to the frame or parallel to it, as chosen; the screw or screws mounted parallel to the frame lie in the arm of the angular piece and in at least one rib which runs approximately parallel to the platform and projects outwardly. This arrangement withstands the load-holding forces.

The rib, preferably together with another rib running parallel to the first, forms an undercut groove. This groove forms the hinge sleeve for the pins of the securing loop. Recesses, which run perpendicular to the groove, extend the range of movement by accommodating parts of the loop; these recesses also define the limit of movement of the loop.

To simplify the application of the securing loops the angular piece preferably has a recess which forms a hinge sleeve for the pins of the securing loop. This protects the handle from damage, provides a secure position when it is out of use, and allows optimum transmission of forces when securing the load, since the handle and sidewall hinges are strong. There is the advantage that no groove is needed in the frame to take the handle.

Further advantages, features and details of the invention are disclosed in the following description with reference to the accompanying drawings:—

Figure 1: A perspective view of part of a vehicle used for transporting goods, with the sidewalls in the vertical using position.

Figure 2: An enlarged cross-section view of the part sectioned along the line II—II in Figure 1.

Figure 3: A cross-sectional view of the same part shown in Figure 2 with the sidewall tilted out of its vertical using position.

Figure 4: A side view of the part shown in Figure 2, but not sectioned.

Figure 5: A side view of the part shown in Figure 3, not sectioned, and with the sidewall in the lowered position.

Figure 6: A further embodiment of the invention corresponding to the view shown in Figure 2.

Figure 7: A side view of the part shown in Figure 6, but not sectioned.

The load-carrying platform of a lorry F shown in Figure 1 with driving cabin 1 and tyres 2

comprises extruded sections 4 for the floor surrounded by a frame 5 and supported by longitudinal beams 6. Projecting upwards from the frame 5 are posts 7 between which are  
5 sidewalls 8 which pivot on hinges 3. There is also a fixed end wall 9.

The frame 5 comprises a web 10, with a flange 11 at the lower edge of the frame as installed and an upper flange 12 which supports the floor  
10 sections 4. An undercut groove 14, partly circular in cross-section, runs along the platform edge 13 which is formed by the web 10 and upper flange 12. This groove is defined by two ribs 15, 16 along the edge of the platform which project  
15 outwards from the web 10 and are spaced apart by a distance c: this determines the size of opening to the groove 14.

An angular-shaped piece 18 is fixed with screws or bolts to the frame 5 below the ribs 15, 16, and the lower flange 19 projects perpendicular to the web 10 and constitutes a hook-like hinge sleeve 20. The pivot axis 21 of the hinge 3 is situated in the hinge sleeve with a lug 22 which can pivot as shown by the arrow z, in  
20 Figure 3. Vertical bolts 23 connect the angular piece 18 to the ribs 15, 16 to allow transmission of load-holding forces.

The preferred securing loop B comprises a U-shaped part and pins 28 at the free ends of the U-shaped part, which are perpendicular to the arms 27 of the U-shaped part and are hinge pins. The arms of the U-shape flank the hook-shaped hinge sleeve 20 on the angular piece 18 and their distance apart is equal to the length of the hinge  
25 sleeve for the sidewall hinges.

The securing loop B in the upward, using position forms an angle W in Figure 2 of about 50° with the surface 24a of the floor sections 4. When in this position, the sidewall 8 is  
30 approximately vertical.

In the downward, non-using position the securing loop B is brought down to the hinge sleeve 20 so that it forms an angle t in Figure 3 of about 20° with the central web 10 of the frame 5.  
35 The securing loop B can only be brought down when the sidewall 8 has been lowered; if the sidewall is returned to its vertical, using position a face on the sidewall 24 presses the securing loop B towards the inner wall of the groove 14 and onto the face P in Figure 2 of the hinge sleeve 20. In this position the securing loop B partly covers an entry slit Q into the hinge sleeve 20; this slit admits the hinge pin 21 into the hinge sleeve.  
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The two pairs of recesses 25, 26 in the ribs 15, 16 in Figure 5 intersect the groove 14; the arms 27 of the securing loop B rest in the recesses 25, 26 when in an extreme position.  
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In the embodiment shown in Figures 6, 7 the angular piece 18a accommodates the securing loop B; there is a hook-shaped piece 30 of breadth m in Figure 5 above the bolts 17 used to secure the angular piece 18a to the frame 5. The hinge pins at the axis 28 attached to the arms 27 of the handle B are held between this hook-shaped piece 30 and the frame 5.  
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The length h in Figure 6 of the securing loop B extending from the axis A to the end 31 of the handle is smaller than the least distance n in Figure 3 of the axis A from the hinge pin axis 21 so that the securing loop B can always be lodged between the sidewall 8 and the angular piece 18.  
70

The angular pieces 18 can be welded to the frame 5 at regions S Figure 6.

## Claims

75 1. A load-bearing assembly comprising a platform including a frame, sidewalls which run at least in part around the platform and are hinged to the frame by hinges, the pins of which lie approximately parallel to the upper surface of the platform and pivot in hook-like hinge sleeves with radial access slits, and at least one securing loop  
80 at an edge of the platform for attachment of load-holding means, the loop being hinged to the platform in such a way that, when the sidewall is in the lowered position, the loop can be brought down to cover the access slit of the hinge sleeve, and to lie between the platform and the sidewall when the sidewall is raised again.

85 2. An assembly according to claim 1, in which the sidewall in its vertical, using position touches the loop when the loop is lying between the sidewall and the platform.

90 3. An assembly according to claim 2, in which a stop on a part of the hinge sleeve for the sidewall faces the loop when the loop is lying between the sidewall and the platform, so the loop is confined in such a manner that it cannot move when out of use.

95 4. An assembly according to any of claims 1 to 3, in which the hinge sleeve is on an arm of an angular piece fixed to the frame and projects outwards from the frame.

100 5. An assembly according to claim 4, in which the angular piece is releasably connected to the frame.

105 6. An assembly according to claim 4, in which the angular piece is mounted securely to the frame by screws or bolts running both perpendicular and parallel to the frame.

110 7. An assembly according to any of claims 1 to 6, in which the hinge axis of the loop is situated in and along an undercut groove defined by two ribs along the edge of the platform.

115 8. An assembly according to claim 7, in which the ribs are provided with recesses running transverse to the groove to accommodate parts of the loop.

120 9. An assembly according to claims 6 and 7, or according to claim 8, in which a bolt, running parallel to the frame, is fixed into the projecting arm of the angular piece and into the two ribs.

10. An assembly according to claim 4, in which the hinge axis of the loop is situated in a recess in the angular piece.

125 11. An assembly according to claim 10, in which the recess in the angular piece is in a hook-shaped part which lies against the frame and together with the frame forms a hinge sleeve for the loop.

12. An assembly according to any of claims 1 to 11, in which the loop comprises a U-shaped part and pins extending from the free ends of the arms of the U-shaped part, these pins running transverse to these arms and defining the hinge axis.
13. An assembly according to claim 11 and 12, in which the hook-shaped part of the angular piece lies between the arms of the U-shaped part of the loop.
15. An assembly according to claim 12, in which the length of the axis of the sidewall hinge sleeve on the angular piece is approximately equal to the breadth of the loop determined by the arms of the loop.

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